

An electronic book 100 is set within an indented portion of a pivotal back cover 102 of the toy housing. A lower base portion 101 of the toy housing supports operator controls and a touch panel 106. The touch panel 106 can utilize the location detection system described above to define a specific position. While not shown, a television monitor 107 can be interconnected to receive inputs from the user. In operation, the user can utilize the wand or pen 103. The user can touch the electronic book which, for example, can be subject to a location detection circuit on the open page 104. For example, an elephant 105 could be touched, and then subsequently the operator can designate where he or she wishes to place the elephant on the screen of the television monitor 107 by contacting the touch panel 106 with a pen, or even a finger, in an alternative embodiment. A child is even able to relocate the elephant on the television monitor through the use of a joystick input 108. The elephant can move on the screen while making sounds which could be associated with an elephant, from the speaker 109 on the toy device, or from the speaker 110 mounted on the television receiver.

In a similar manner, the other characters and indicia, e.g., monkey, mountain, etc., can be designated from the electronic book 100 and located on the television monitor 107 in order to draw a picture on the television screen. The control buttons 111 can be used for designating the location of characters, while the slide control member 112 can be used for changing the color of the screen or the characters.

As can be appreciated, various alternative arrangements can be utilized to accomplish the purposes of the present invention. For example, the use of the optical detection system can be free from any noise that could be associated with electromagnetic transmissions, and it would not be necessary to use any special pickup devices, pointers, etc. Any rod-shaped body, such as a finger, hand, or pencil that can cast a shadow can be utilized. Because the location detection system can be independent of the specific electronic book or page, there is no necessity to utilize special paints, printing processes, or other special preparations. It is only necessary that the sheet does not interfere with the special location detection circuit that is to be utilized. Thus, the printed indicia can be of a conventional configuration and relatively easily and inexpensively created. The only parameters required are that the information be appropriately located relative to the location detection circuit so that any ROM containing stored information relative to that page can be addressed appropriately by the location detection circuit. In operation, a child can utilize the entertainment drawing system disclosed in FIG. 7 in a highly enjoyable manner. He or she is, in fact, operating with a user-friendly approach to a computer system.

Those skilled in the art will appreciate that various adaptations and modifications of the just-described preferred embodiment can be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.

What is claimed is:

1. An apparatus for providing data related to an operator's selection, comprising:

a planar panel which is formed so as to removably attach an information storing device on the planar panel, wherein said information storing device comprises: a sheet plate with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations of the surface thereof, memory means inter-

grated into the information storing device and stored with a plurality of information having data to provide signals for causing a video and/or sound effect related to said visual indicia with addresses representative of locations on the surface of said sheet plate corresponding to positions of the respective visual indicia; and a connector means arranged so as to transmit said packets of information;

a location detection member comprising sensor means functionally associated with said planar panel and arranged so as to provide a location signal which is indicative of the coordinates of the indicium selected from said plurality of visual indicia by the operator;

a connection means detachably connected to the connector means of said information storing device and arranged so as to transmit said plurality of packets of information from said information storing device when said storing device is attached to said planar panel; and

a control means, responsive to the location signal supplied from said location detection member, arranged so as to retrieve the data from one of said plurality of packets of information corresponding to the indicium selected by the operator.

2. The apparatus of claim 1, further comprising a video signal generating means arranged so as to provide a video signal for displaying on a display screen an image corresponding to the indicia selected by the operator by referring to the packets of information transmitted from the information storing device.

3. The apparatus of claim 1, wherein said information storing device further comprises a plurality of sheet plates bound together in a book format, each of said sheet plates having a plurality of visual indicia, readable by the operator, printed at locations on the surface thereof, and wherein said location detection member further comprises means for detecting the plate selected from said sheet plates by the operator.

4. An information storing device for use with the apparatus as defined in claim 1 and detachably mountable on the planar panel, comprising a plurality of sheet plates, bound together to form a book, each of said sheet plates being formed with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on a surface thereof, memory means integrally assembled with the book and stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to said visual indicia with addresses representative of locations on the surface of each sheet plate corresponding to positions of the respective visual indicia, and a connector means from which said packets of data are to be transmitted to said apparatus.

5. An apparatus for displaying a video image on a display, comprising:

a planar panel on which an information storing device is detachably disposed, said information storing device having a sheet plate with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on the surface thereof, and an integrated memory stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to each indicium with addresses corresponding to coordinates of the respective visual indicia on the surface of said sheet plate;

a location detection means having a grid array of electrode wires constituting a predetermined pattern along said planar panel, electromagnetic signal supplying

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means arranged so as to supply electromagnetic signals to said plurality of electrode wires, and a pickup sensor, said location detection means arranged so as to supply, in response to an operator selecting an indicium by placing said pickup sensor adjacent to the indicium on said sheet plate when the information storing device is disposed on said planar panel, a location signal which is indicative of the location of the selected indicium;

a connection means arranged so as to transmit said plurality of packets of data stored in said integrated memory when said sheet plate is disposed on said planar panel;

a video signal generating means formed so as to generate video signals based on the data supplied from said integrated memory for displaying an image on a video display monitor; and

a control means arranged so as to retrieve, responsive to the location signal supplied from said location detection means, the data from one of said plurality of packets of data corresponding to the indicium selected by the operator and generate a signal for causing a video and/or sound effect related to the selected indicium on said video display monitor.

6. An information storing device for use with the apparatus as defined in claim 5 and detachably mountable on the planar panel, comprising a plurality of sheet plates, bound together to form a book, each of said sheet plates being formed with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on a surface thereof, an integrated memory integrally assembled with the book and stored with a plurality of packets of data to provide signals for causing a video and/or sound effect relating to said visual indicia with addresses corresponding to coordinates of the respective visual indicia, and a connector means detachably connectable to the connection means arranged so as to transmit said packets of data to said apparatus.

7. An apparatus for displaying a video image on a display, comprising location detection means having a planar panel on which an information storing device is to be removably mounted, wherein said information storing device comprises: a sheet plate with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on the surface thereof, and an integrated read-only memory stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to each indicium with addresses corresponding to coordinates of the respective visual indicia on the surface of said sheet plate;

a connection means arranged so as to transmit said plurality of packets of data stored in said integrated memory to the apparatus when said sheet plate is disposed on said planar panel;

a video signal generating means formed so as to generate video signals based on the data supplied from said read-only memory for displaying a video image on a video display;

sensor means functionally coupled with said location detection means and arranged so as to provide a location signal which is indicative of the location of the indicium selected by the operator placing said sensor means adjacent to the indicium on said sheet plate when the information storing device is disposed on said planar panel; and

control means formed so as to retrieve, responsive to the location signal supplied from said location detection

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means, the data from one of said plurality of packets corresponding to the indicium selected by the operator and to generate a signal for causing a video and/or sound effect related to the selected indicium on said video display.

8. An information storing device for use with an apparatus as defined in claim 7, the information storing device comprising:

a plurality of sheet plates, bound together in a book-format, each of said sheet plate having a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on the surface thereof;

an integral read-only memory, integrally assembled and removable with said storing device, the read-only memory stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to each visual indicium at addresses corresponding to specific locations of the respective visual indicia on the sheet plates; and

a connector means detachably connectable with said connection means and arranged so as to transmit said packets of information to said apparatus.

9. A system for causing a video image and/or sound effect on a video display monitor in response to an operator's selection, the system comprising a housing and an information storing document, said information storing document comprising:

attachment means formed so that the document can be removably engaged with the housing;

a planar page including thereon a plurality of visible symbols readable by an operator; and

memory means integrated into, and removable with, said document, said memory means stored with data to provide signals for causing a video and/or sound effect related to each of the visible symbols at addresses corresponding to locations of each of the visible symbols on the planar page,

said housing comprising:

connection means formed so as to interact with the attachment means of the

document to removably attach the document to the housing, the connection means also forming a functional connection to the memory means so as to transmit said prerecorded data when information storing document is engaged with the housing;

a video signal generating means formed so as to generate video signals based on the prerecorded data supplied from said memory means for displaying a video image on a video display;

location detecting means including a sensor means formed so as to detect operator's selection of one of symbols by placing the sensor in proximity to said one of symbols and to provide a location signal indicating the location of the selected symbol; and

control means, responsive to the location signal, formed so as to retrieve data at the address corresponding to the location of the selected symbol out of the prerecorded data and provide at least one of a visual and an audio output based on the retrieved data corresponding to the selected symbol.

10. In combination, an information storing device comprising:

a plurality of sheet plates, bound together to form a book, each of said sheet plates having a plurality of visual indicia, visually recognizable by an operator, printed at locations on a surface thereof;

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- an integral read-only memory integrally assembled with the book and stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to said visual indicia with addresses corresponding to specific locations of the respective visual indicia on the surface of each sheet plate;
- a first connector means from which said packets of data are to be transmitted; and
- an apparatus for displaying a video image on a display, comprising:
- location detection means including a first panel on which said information storing device is removably mounted, a second panel disposed separately from said first panel, a pickup sensor which is functionally connected with said first and second panels, and location signal generating means arranged so as to generate location signals representing two-dimensional locations on said first and second panels in response to an operator placing said pickup sensor thereon;
 - a second connector means to which said first connector means is removably connected so as to transmit the plurality of packets of data from said read-only memory to the apparatus;
 - a first control means arranged so as to retrieve, responsive to the location signal supplied from said location detection means, a packet of data corresponding to an indicium selected by the operator placing said pickup sensor on the selected indicium on one of the sheet plates mounted on said first panel and so as to provide a video signal in response to the retrieved packet of data; and
 - a second control means arranged so as to provide a change with respect to the displayed image in response to the location signal supplied from said location detection means in response to the operator placing said pickup sensor on a selected location of said second panel.
11. An apparatus for providing data related to an operator's selection, comprising:
- a first planar panel which is formed so as to removably attach an information storing device to said planar panel, wherein said information storing device comprises:
 - a sheet plate with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations of the surface thereof, memory means integrated into the information storing device and stored with a plurality of packets of information having data to provide signals for causing a video

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- and/or sound effect related to said visual indicia with address representative of locations on the surface of said sheet plate corresponding to positions of the respective visual indicia; and
- a connector means through which said packets of information are transmitted to said apparatus;
 - a location detection member comprising a sensor means functionally associated with said planar panel and including a pointer, said location detection member being arranged so as to provide a location signal which is indicative of the coordinates of the visual indicium selected from said plurality of visual indicia by the operator placing the pointer in proximity to the visual indicium;
 - a connection means which detachably connects to the connector means of said information storing device so as to transmit said packets of information from the memory means when said information storing device attached to said first planar panel;
 - a control means which, responsive to the location signal supplied from said location member, retrieves the data from one of said plurality of packets of information corresponding to the visual indicium selected by the operator so as to supply a display monitor with a video signal thereby to display on a display screen an image corresponding to the indicia selected by the operator; and
 - a second planar panel disposed at a location spaced apart from the first planar panel of said location detection member and arranged so as to display the image corresponding to the indicium selected by the operator at a desired location on the display screen by the operator touching, with said pointer, said second planar panel at a position corresponding to the desired location on the screen.
12. The information storing device for use with the apparatus as defined in claim 11 and detachably mountable on the first planar panel, comprising a plurality of sheet plates, bound together to form a book, each of said sheet plates being formed with a plurality of visual indicia, visually recognizable as visual indicia by an operator, printed at locations on a surface thereof, memory means integrally assembled with the book and stored with a plurality of packets of data to provide signals for causing a video and/or sound effect related to said visual indicia with addresses corresponding to positions of the respective visual indicia, and a connector means from which said packets of data are to be transmitted to said apparatus.

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13. An information processing system for use with a book, the information processing system comprising:

(a) a housing that is adapted to receive the book, wherein the book comprises a plurality of pages;

(b) a location detection system adapted to determine a location of a user's finger when the user selects content on at least one of open pages of the book with the user's finger when the book is on the housing;

(c) a page detection system adapted to automatically determine which pages of the book are open when the book is on the housing, wherein the page detection system comprises a plurality of optical sensors;

(d) a memory coupled to the location detection system, the memory comprising sound information related to the content in the book; and

(e) a speaker coupled to the location detection system.

14. The information processing system of claim 13 wherein the housing holds the book in a fixed position, and wherein the optical sensors are proximate to a perimeter region of the open pages of the book when the book is on the housing.

15. The information processing system of claim 13 wherein the book is a children's book.

16. The information processing system of claim 13 wherein the location detection system comprises a light receiver array.

17. The information processing system of claim 13 wherein the pages of the book comprise a plurality of notches, and wherein the optical sensors detect light passing through the notches to produce an appropriate signal indicating which pages of the book are open.

18. The information processing system of claim 13 wherein the content comprises a figure.

19. The information processing system of claim 13 wherein the content comprises a letter.

20. The information processing system of claim 13 wherein the location detection system is capable of determining a position of any arbitrary location on the open pages of the book selected using the user's finger.

21. The information processing system of claim 13 wherein the memory is a read only memory.

22. The information processing system of claim 13 wherein the location detection system comprises an X detection circuit and a Y detection circuit.

23. The information processing system of claim 13 wherein the speaker is integrated in the housing.

24. The information processing system of claim 13 wherein the memory stores coordinates of the content.

25. The information processing system of claim 13 wherein the housing comprises an indented portion and wherein the book lies in the indented portion when the book is on the housing.

26. The information processing system of claim 13 wherein the housing includes a pivotal back structure.

27. An electronic book reading process, the process comprising:

(a) placing a book comprising a plurality of pages and content on a housing of an information processing system, the information processing system comprising

(i) the housing,

(ii) a location detection system adapted to determine user designated coordinates within the book when the book is on the housing,

(iii) a page detection system adapted to automatically determine which pages of the book are open when the book is on the housing, wherein the page detection system comprises a plurality of optical sensors,

(iv) a speaker coupled to the location detection system, and

(v) a memory coupled to the location detection system, the memory comprising sound information which is related to the content in the book;

(b) selecting the content with a finger after (a) when the book is on the housing;

and

(c) receiving a sound related to the selected content after (b) while the book is on the housing.

28. The electronic book reading process of claim 27 wherein the housing holds the book in a fixed position, and wherein the optical sensors are proximate to a perimeter region of the open pages of the book.

29. The electronic book reading process of claim 27 wherein the housing comprises an indented portion and wherein the book lies in the indented portion when the book is on the housing.

30. The electronic book reading process of claim 27 wherein the location detection system comprises a light receiver array.

31. The electronic book reading process of claim 27 wherein the pages of the book comprise a plurality of notches, and wherein the optical sensors detect light passing through the notches to produce an appropriate signal indicating which pages of the book are open.

32. The electronic book reading process of claim 27 wherein the content comprises a figure.

33. The electronic book reading process of claim 27 wherein the content comprises a letter.

34. The electronic book reading process of claim 27 wherein the location detection system is capable of determining a position of any arbitrary location on the open pages of the book selected using the user's finger.

35. The electronic book reading process of claim 27 wherein the memory is a read only memory.

36. The electronic book reading process of claim 27 wherein the location detection system comprises an X detection circuit and a Y detection circuit.

37. The electronic book reading process of claim 27 wherein the speaker is integrated in the housing.

38. The electronic book reading process of claim 27 wherein the memory stores coordinates of the content.

39. The electronic book reading process of claim 27 wherein the information processing system further comprises a control circuit and an audio drive circuit coupled to the location detection system.

40. The electronic book reading process of claim 27 wherein the housing includes a pivotal back structure.

41. The electronic book reading process of claim 27 wherein the book is a children's book.